

What is claimed is:

1. A printing apparatus comprising:

5 a cartridge mounting portion on which a plurality of ink cartridges are detachably mountable, each said ink cartridge having an element into which information may be written;

an accumulating means for accumulating a discharge amount of ink discharged for every ink cartridge mounted on  
10 said cartridge mounting portion; and

a writing member for writing said information into said element,

wherein

a threshold is provided for every ink cartridge; and

15 when an accumulated value obtained by said accumulating means for a certain ink cartridge reaches said threshold provided for that ink cartridge, said writing member writes said information into said element of that ink cartridge where said accumulated value obtained by said accumulating  
20 means for said ink cartridge has reached said threshold.

2. A printing apparatus according to claim 1, wherein

one ink cartridge is selected out of said plurality of  
25 ink cartridges mounted on said cartridge mounting portion according to said accumulated value.

3. A printing apparatus according to claim 2, wherein

30 said writing member writes information about a used amount or residual quantity of ink contained in said ink cartridge into said element in said selected ink cartridge.

4. A printing apparatus according to claim 3,  
wherein

when said writing member writes said information into  
said element in said ink cartridge, said accumulated value is  
5 reset.

5. A printing apparatus according to claim 2,  
wherein

said cartridge mounting portion is movable; and  
10 said writing member conducts a writing operation in a  
noncontact state into said element, when said cartridge  
mounting portion is in a predetermined positional  
relationship with said writing member.

15 6. A printing apparatus according to claim 1,  
wherein

said threshold for every ink cartridge is set according  
to a capacity of ink which may be contained in said ink  
cartridge.

20 7. A printing apparatus according to claim 1,  
wherein

a bi-directional printing by a discharge head which  
discharges ink is possible;

25 if said accumulated value of a certain ink cartridge  
reaches said threshold provided for said ink cartridge while  
said discharge head is moving in a direction away from said  
writing member and discharging ink to print, and if printing  
data exists, said printing data being data to be printed by  
30 discharging ink while said discharge head moves in a  
direction closer towards said writing member,

at least after printing is conducted by said discharge  
head moving towards said writing member and discharging ink,

said writing member writes said information into said element.

8. A printing apparatus according to claim 1,  
5 further comprising a discharge head for discharging ink while moving with said cartridge mounting portion, wherein:

said printing apparatus conducts a flushing operation for discharging ink periodically from said discharge head; and

10 said writing member writes said information into said element of said ink cartridge in which the accumulated value has reached said threshold, in relation with said flushing operation.

15 9. A printing apparatus according to claim 8, wherein

said writing member writes said information into said element of said ink cartridge in which the accumulated value has reached said threshold in relation with a flushing  
20 operation conducted for the first time after said accumulated value of a certain ink cartridge reaches said threshold provided for said ink cartridge.

10. A printing apparatus according to claim 1,  
25 further comprising a discharge head for discharging ink while moving with said cartridge mounting portion, wherein:

said printing apparatus conducts a flushing operation for discharging ink periodically from said discharge head;

a writing position of said writing member and a  
30 conducting position of the flushing operation are provided in this order from a printing region side in a moving direction of said discharge head; and

while said discharge head is moving towards said

conducting position of said flushing operation in order to perform said flushing operation for the first time after said accumulated value of a certain ink cartridge has reached said threshold provided for said ink cartridge,

5        said writing member writes said information when said element moving with said discharge head passes said writing position.

11.    A printing apparatus according to claim 10,  
10    wherein:

      a plurality of information may be written into said element; and

      said writing member writes only information about said used amount or residual quantity out of said plurality of  
15    information.

12.    A printing apparatus according to claim 1,  
      wherein:

      a plurality of printing modes with different printing  
20    speeds may be conducted; and

      in at least one printing mode out of said plurality of printing modes,

      even in a case said accumulated value of a certain ink cartridge has reached said threshold provided for said ink  
25    cartridge, said writing member does not conduct said writing operation in relation with a flushing operation conducted for the first time thereafter.

13.    A printing apparatus according to claim 1,  
30    wherein

      said one writing member is provided for a plurality of ink cartridges mounted on said cartridge mounting portion.

14. A printing apparatus according to claim 13, further comprising a discharge head for discharging ink while moving with said cartridge mounting portion, wherein:

said printing apparatus conducts a flushing operation  
5 for discharging ink periodically from said discharge head;  
and

in a state said discharge head is positioned in said  
conducting position of said flushing operation, said writing  
member opposes an element provided in any one of said ink  
10 cartridges mounted on said cartridge mounting portion.

15. A printing apparatus according to claim 1, wherein:

said writing member is respectively provided for said  
15 plurality of ink cartridges mounted on said cartridge  
mounting portion; and

said writing members oppose said respective elements  
provided in said ink cartridges mounted on said cartridge  
mounting portion in a state where a discharge head is  
20 positioned in a conducting position of a flushing operation.

16. A printing apparatus according to claim 1, wherein:

said writing member is provided respectively for said  
25 plurality of ink cartridges mounted on said cartridge  
mounting portion; and

said writing member conducting writing of said  
information a writing member disposed in a position closest  
to a printing region.

30

17. A printing apparatus according to claim 1, wherein:

said writing member may read said information from said

element;

said writing member reads an ID information stored in an element in said ink cartridge when said ink cartridge is mounted on said cartridge mounting portion; and

5       said writing member, after reading said ID information, recognizes each element by said ID information which has been already read, without conducting a reading operation again, and writes said information into each element in said ink cartridge mounted on said cartridge mounting portion.

10

18. A printing apparatus according to claim 1, wherein:

15       said element provided in said ink cartridge is stored with a timing information for determining a timing for writing said information about said used amount or residual quantity into said ink cartridge; and

said threshold is set according to said timing information.

20       19. A printing apparatus according to claim 18, wherein:

said timing information is a capacity information about a capacity of ink which may be contained in said ink cartridge, and

25       said threshold is set according to said capacity information.

20. A printing apparatus according to claim 18, wherein:

30       said timing intonation is a threshold information indicative of a threshold corresponding to a capacity of ink which may be contained in said ink cartridge, and

said threshold is set according to said threshold

information.

21. A printing apparatus according to claim 5,  
further comprising a discharge head for discharging ink while  
5 moving with said cartridge mounting portion, wherein:

said printing apparatus conducts a flushing operation  
for discharging ink periodically from said discharge head;  
and

said writing member writes said information into said  
10 element of said ink cartridge in which the accumulated value  
has reached said threshold, in relation with said flushing  
operation.

22. A printing apparatus according to claim 21,  
15 wherein

when conducting said flushing operation, said writing  
member selects one ink cartridge out of said plurality of ink  
cartridges mounted on said cartridge mounting portion  
according to said accumulated value.

20

23. A printing apparatus according to claim 1,  
wherein

said accumulating means selects at least one ink  
cartridge, but less than all ink cartridges, according to  
25 said accumulated value, and

wherein said writing member writes said information  
into only said at least one selected ink cartridge.

24. A printing apparatus according to claim 1,  
30 wherein

said printing apparatus is capable of detecting that  
ink in any one of said ink cartridges has reached a  
predetermined amount,

before detecting that the ink in said ink cartridge has reached said predetermined amount, said printing apparatus sets said threshold to a predetermined value, and

5 after detecting that the ink in said ink cartridge has reached said predetermined amount, said printing apparatus sets said threshold according to said accumulated value accumulated until the ink in said ink cartridge has reached said predetermined amount.

10 25. A printing apparatus according to claim 24, further comprising

a head for discharging ink,  
wherein

15 said accumulating means accumulates a discharge amount of ink discharged from said head according to a drive amount of said head.

20 26. A printing apparatus according to claim 25, wherein said drive amount of said head includes at least either one of:

a drive amount for which said head is driven to form dots; and

a drive amount for which said head is driven to prevent nozzle clogging.

25

27. A printing apparatus according to claim 24, further comprising:

a head for discharging ink; and

30 an absorption member for absorbing ink from said head, wherein

said accumulating means accumulates a discharge amount of ink that is absorbed by said absorption member and discharged from said head.



